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**INTERNATIONAL CITY MANAGERS' ASSOCIATION
1313 EAST 60TH STREET - CHICAGO 37, ILLINOIS**

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PARKING METER ADMINISTRATION

What are some of the best practices that are being developed with regard to parking meter purchase, regulation, collections, maintenance, and enforcement?

Parking meters have become an established part of the traffic control system in more than 1,500 cities. Meters are devices for regulating the use of parking space. They make the motorist more conscious of parking regulations, make the police conscious of the need for efficient and fair enforcement without favoritism, and permit more effective parking control with fewer policemen. But the value of meters as traffic control devices can be realized only through careful planning and administration. This report, summarizing the accumulated experience of many cities, may be helpful to city officials in avoiding pitfalls and in solving local problems.

Cities With Meters. By June 30, 1947, approximately 1,200 cities had installed parking meters. Except for the cities over 500,000, the larger cities are in proportion to their numbers installing meters more rapidly than their smaller neighbors. Three-fourths of the cities from 100,000 to 250,000 have meters, but only a little more than one-half of the cities of 25,000 to 100,000 have meters, 40 per cent of those from 10,000 to 25,000, and about one-fourth of those from 5,000 to 10,000.

The number of parking meters installed in any city corresponds roughly with its population. A Pennsylvania study shows that 9 cities between 50,000 and 100,000 have an average of 605 meters, 11 places between 25,000 and 50,000 an average of 375 meters, 41 places between 10,000 and 25,000 an average of 269 meters, 43 places between 5,000 and 10,000 an average of 183 meters, 31 places between 2,500 and 5,000 an average of 135, and 12 places under 2,500 an average of 74. Incidentally, Pennsylvania has the most cities with parking meters--twice as many as any other state and also twice as many meters.

Removal of parking meters has occurred in 43 cities since meters were first installed 12 years ago. But even in many of these cities they were eventually replaced. Oversalesmanship is the principal reason for such removals, and a dozen more cities, mostly small communities without any real traffic problem, reportedly will have them removed at the end of the trial period. For example, one city with less than 900 inhabitants installed 150 parking meters. Another reason is the opposition of farmers. The people of Brighton, Ore. (pop. 100 in 1940) after five months trial recently voted 3 to 1 for removal of the meters. It is reported that the meters diverted much rural trade to surrounding cities. Hemet, Calif. (2,595) also voted recently to remove meters that had been in operation for about six months.

Parking Survey. Before meters are installed in any city a survey should be made to ascertain not only where motorists can and do park, but also why they park, where they would like to park, and how long they park. A good survey not only provides the information needed for the long-range handling of the parking problem, but also indicates specific streets where meters might be desirable, and the locations where the meters should be set for one-half hour or less, one-hour, and two-hour parking limits. When such restrictions and time limits have been determined for the downtown business streets, meters can be installed as an aid to regulate the time limits where curb parking is permitted.

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Meters are not a cure-all but they are useful as a partial solution if there is much overtime parking, double parking, or illegal curb parking, and if motorists must cruise endlessly in search of a parking place. In most cities other techniques are used to supplement parking meters, such as one-way streets, off-street parking lots, prohibiting curb parking on certain streets or at certain times, requiring remodelled or new buildings to provide off-street parking spaces, routing traffic around the business section, etc.

In analyzing the local traffic problem smaller cities may be able to get expert advice from their state highway department. Cities that wish to employ a consultant may obtain a list of qualified organizations on request to MIS. If the survey is to be locally planned and executed a copy of "Manual of Traffic Engineering Studies" (National Conservation Bureau, 60 John Street, N.Y. 1945. 115pp. \$2) should be obtained.

Types of Meters. There are two types--manual and automatic. With the manual meter the motorist turns a handle after depositing the coin and the automatic meters are actuated merely by depositing a coin. Among 701 reporting cities at the end of 1946, a total of 339 cities had manual meters only, 330 cities automatic only, and 32 cities some of both types. The type and make of the meters in each city are reported in the 1947 Municipal Year Book and in "Parking Meters in the United States" (see last section below). Arguments for both types are summarized in a report issued by the Municipal Finance Officers Association as noted below.

The parking survey will help determine whether the one-hour-for-a-nickel variety, the penny-nickel, or the multiple-penny-nickel meter should be installed. In recent years the penny-nickel and the multiple-penny-nickel meters have replaced the nickel meters in popularity. The multiple-penny-nickel meter generally results in greater turnover and greater public satisfaction. Such a meter gives the maximum time for five cents and one-fifth of this time for one cent. Such meters do not penalize the short-time parker. Virtually every parker would pay something and the amount paid would be more nearly proportionate to the time parked. The penny-nickel type also cuts down on the unexpired free time so typical of nickel meters and thus tends to reduce cruising by drivers hunting for free parking time.

Another type of meter is being installed in city-owned off-street parking lots. In St. Joseph, Mich., for example, such meters take from one to five nickels or one quarter and are set for two hours for each nickel or ten hours for a quarter. Among other cities that have meters in parking lots are Ann Arbor and Cadillac, Mich.; Rochester, N.Y.; Manchester, N.H.; Miami Beach, Fla.; Coos Bay, Ore.; and Danville, Ill. Most of these cities are using parking meter receipts for the purchase and improvement of additional off-street parking space.

Make of Meters. The volume of sales by a meter company may or may not be an indication as to the quality of its meter. Two cities that recently made engineering studies of meters in order to decide what meter to buy arrived at different conclusions. Apparently the Parkrite and Park-O-Graf meters are no longer available because officials of several cities have reported that these meters have been removed for lack of repair parts.

Out of 690 cities reporting at the end of 1946, according to the 1947 Municipal Year Book, 188 cities had Miller meters, 153 cities Dual meters, 104 cities Mark-Time meters, 61 Mico, 56 Karpark, and 47 Park-O-Meter. Traffico, Park-O-Graf, Standard, Apex, Buckeye, and Parkrite meters had been

installed by from two to nine cities, and 56 cities had more than one make of meter. Of the 149 Pennsylvania communities having parking meters in 1946, there were 83 installations of Miller meters, 29 Dual, 24 Mark-Time, 8 Mico, 7 Park-O-Meter, 3 Karpark, 1 Park-O-Graf, and 1 Standard. Newest make is the Alfco Twin (two meters on one post) made by International Meters, Inc., which has been acquired by American LaFrance Foamite Corporation, Elmira, N.Y. The Alfco, Dual, Karpark, and Park-O-Meter are of the automatic type and the Miller, Mico, and Mark-Time are manual.

Six companies that have done most of the recent business of selling and installing meters are: Dual Parking Meter Company, 117 Walnut Avenue, N.E., Canton 2, Ohio; Duncan Meter Corporation (Miller), 835 North Rush Street, Chicago 22, Ill.; the Karpark Corporation, 2453 Gilbert Avenue, Cincinnati 6, Ohio; Magee Hale Park-O-Meter Company, Commerce Exchange Building, Oklahoma City, Okla.; Michaels Art Bronze Company (Mico), 231 Court Street, Covington, Ky.; and M. H. Rhodes, Inc., (Mark-Time and Perfection), 30 Bartholomew Avenue, Hartford 6, Conn. Other concerns which have appeared in the public record as bidding or exhibiting meters are: Excel Parking Meter Co., Inc., Market Street National Bank Building, Philadelphia; International Meters, Inc., 41 East 42 Street, New York; and Martin Timing Devices Co., 133 Morgan Road, W.S., Philadelphia. Other concerns reportedly in the field but which are not listed in the Fall 1947 telephone directories of their cities are: National Meters, Memphis; Standard Parking Meter Co., Philadelphia; and Turret Top Meter, Los Angeles.

Price of Meters. The price of meters varies from \$60 to \$80. The first installations in 1935 and 1936 cost about \$58 but some cities later paid as low as \$37 per meter. During the last year prices generally have been \$60 or more per meter including installation. Installation costs run from \$3 to \$5 per meter. Methods used by meter companies in submitting bids make price comparison difficult. Some bid prices include repair parts, extra meter heads, free meters, coin boxes, carrying cases, and repair concessions. Some meter companies offer to train a serviceman and pay his salary for six months. Thus a company may not reduce its standard price but will throw in extra equipment and provide certain services, which in effect reduce the cost per meter.

Getting Bids. Generally it is desirable that city officials do not commit themselves to a particular type of meter until after the bids have been received, analyzed, and the meters tested. In other words, the specifications should be "open" to allow bids on both the automatic and manual types, as was done in the 1945 specifications of Kansas City, Mo. (copy on request to MIS). On the other hand, officials of some cities decide in advance that bids will be received only on one type. For example, the District of Columbia recently asked for bids on the automatic type (copy of specifications available on request to MIS) and Berkeley, Calif., on the manual type (loan copy on request to MIS). The contract in the District was awarded for 350 Park-O-Meters at \$64 each installed, although 660 Dual and Karpark meters had been installed previously. Berkeley bought 850 Miller meters at \$80 each, the company agreeing to install the meters for six months free trial including payment of shipping charges and cost of installation.

Bidders should quote their prices for the meter head, standard, and installation costs separately so as to permit price comparisons between the different manufacturers. Bidders should be asked to indicate what discount will be allowed for cash payment within 30 days after installation. Specifications also should require each bidder to submit a sample of a complete meter and all of the parts making up the meter mounted on a panel board. A bond or certified check of a specified amount should be filed as a guarantee that if the proposal is accepted by the city a contract will be entered into. Specifications also should provide

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that the successful bidder will be required to furnish a bond of not less than 50 per cent of the total amount of the contract as a guarantee for faithful performance.

When meters are replaced because they are worn out or because a new type is desired the city generally can get an allowance by trading in the old heads. For example, when Salina, Kans., recently changed from a nickel-type meter to a multiple-penny-nickel type the city was allowed \$7,000 trade-in on 600 old meter heads, this amount helping to reduce the \$75 price for the new heads. The new meter heads permit 12-minute parking for one cent and up to two hours for two nickels.

The meters submitted should be inspected by the purchasing agent who may give bidders an opportunity to explain their proposals and the relative merits of their meters. Some cities retain outside laboratory services who check the meters for conformance with specifications. All bids should be tabulated to show for each company the unit price, trade-in allowance, type and value of additional equipment offered, training services, time when partial delivery will be made and when complete delivery will be made, total price for number ordered, terms and discount, date when full amount is due, and net cost to the city.

It is not necessary or desirable for city officials to appoint committees to make recommendations as to what meter the city ought to buy. Such committees may be useful in determining whether or not a city should buy meters but the type and make of meters to be bought should be decided by city officials.

Physical Features of Meters. In determining what meter to buy city officials should consider such features as:

1. Coin capacity, frequency of rewinding automatics, and whether a register or coin counter is desired. Coin counters are of doubtful value; many city officials consider them as just something else to get out of order as the coins must be counted in the treasurer's office anyway.

2. Directions for operation should be brief but adequate and easy to see and read. The method of operating the meter should be easily and quickly discernible by the motorist.

3. Outer case should have good general appearance, all parts should be durable and corrosion-resistant and built so that striking the case will not affect operation. Outer or inner case also should provide adequate protection to inside mechanism from rust and dust.

4. Estimate maintenance required--ease of removing time mechanism, frequency of rewinding, availability and cost of repair parts, type of guarantee offered by company. (The company that recently sold 850 meters to Berkeley guaranteed the meters for five years against mechanical breakdown and for two years against vandalism.)

5. A window that shows the last coin deposited tends to cut down the use of slugs.

6. The dial, indicator, and violation signal should be visible from both sides so as to show how much time has been used and when the parking time has expired.

7. Coin slot should be easy to locate and manner of inserting coins should be obvious.

8. Observe demonstration of single coin meters, multiple coin meters, and meters which permit the use of coins in combination.

Financial Arrangements. Most agreements for the purchase of meters provide that 50 per cent of the gross receipts be turned over to the company each month until the meters are paid for. In some cities 75 per cent of the receipts are paid to the company while a few cities retain all receipts during the trial period. A few cities pay cash, receiving discounts for payment within 30 days after installation. Meters should be bought for cash when the city is sure of keeping the meters. Among the cities that have paid for meters from general revenues are Cincinnati, Norfolk, Toledo, and Wilkes-Barre. Finally, the city should carefully consider the record and reliability of the meter company before awarding the contract and availability of meter parts in the future.

Sales Pressure. City officials should beware of the strategy used by some parking meter representatives who use high-pressure whirlwind tactics in selling their meters before other meters can be considered. A "local representative" is used by some meter companies for the purpose of influencing local officials, and if unfair practices are used the meter company disclaims responsibility. In order to get a contract the representative of one company, in an attempt to discredit the meters of a competing concern had sold to a neighboring city, allegedly distributed devices for use in jamming the meters in that city. The meter companies themselves ought to take steps to change the sales tactics of their representatives and the lowest bid possible ought to be made when requested by the city in competitive bidding.

Trial Period. The meter companies generally agree to a trial period of six to nine months after which the meters will be removed by the company without cost or obligation to the city should the city decide not to keep them. During this trial period the city usually retains one-half (sometimes one-fourth) of the gross receipts from the meters, with the balance going to the meter company each month until the price is paid. In some cities, as in Berkeley for example, the city retains all of the receipts during the trial period, paying for the meters later by giving the company 50 per cent of the gross receipts until the cost price is paid.

Sometimes there is considerable public opposition to parking meters when news of their installation becomes known but once they are put to use the public gradually comes to accept them as established fixtures in the shopping area. Much of the initial opposition to the "one-armed bandits" has disappeared, for more and more citizen groups are petitioning for their installation. A good deal of the early unfavorable reaction can be dispelled if the reason for installing the meters and the details of their operation are carefully explained to the residents and shoppers. Their installation should be advertised as an experiment with the public assertion that prompt removal will result unless they aid in solving the local parking problem.

Regulating Use of Meters. When a city decides to install meters, it is desirable to enact a special ordinance regulating the use of meters. The ordinance designates parking meter zones, provides for lines or marks on the curb or street for individual spaces (generally 20 to 22 feet in length), authorizes city officials to contract for the purchase and installation of meters and spare parts, provides that the meters shall be placed on the sidewalk in such a position as

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to leave no doubt as to the individual parking space for which the meter indicates parking time, provides that each meter indicate the legal parking time established for the space indicated and extent of the legal parking time, requires the owner or operator of a vehicle entering a parking space to deposit a proper coin or coins, provides that no deposit of coins shall entitle any vehicle to occupy a space for longer than the normal parking period, defines violations, and provides for attaching violation notices to vehicles. Most ordinances allow a motorist to use any unexpired time left by a previous parker on the ground that he is not parking longer than the legal limit and also because of the difficulty of enforcing any other plan. (A copy of a typical ordinance is available on request to MIS. See also model ordinance referred to at end of this report.)

Time Allowed for Parking. Meters generally are operated from 8:00 a.m. or 9:00 a.m. to 6:00 p.m. five days a week and somewhat longer on Saturdays, up to 9:00 or 10:00 p.m., the general rule being that meters operate during business hours. The parking time limit varies between cities and in a single city and must be based on surveys of the kinds of business transacted on a given street and the length of stay necessary. For example, many cities have a 12 or 24 minute limit near banks, one hour in shopping districts, and two hours in areas where the parking problem is not as acute. Where only nickel meters are used and the time allowed is excessive, motorists may pay for more time than they use and this leads to the practice of cruising to find meters with unexpired time. Perhaps the time limit should be reduced or multi-penny meters installed.

The average shopping time in smaller cities is likely to be less than an hour and in some places less than 30 minutes. The average shopping time tends to increase with the size of the community. A survey in three small Pennsylvania cities showed that from 75 to 92 per cent of the cars parked less than one hour in the central business district. Parking meters have tended to reduce the average parking time, thus providing a higher turnover. For example, the average parking time dropped 24 per cent in Pittsburgh and 37 per cent in Johnstown after meters were installed. In Portland, Oregon, the average parking time of cars in the one-hour downtown district was 63.7 minutes prior to the installation of meters as compared with an average of 41.7 minutes in the same area following the installation of the meters. Time allowed for parking should not be based on the experience of neighboring cities but on a careful local analysis.

Loading Zones. Curb loading zones should be prohibited in metered areas wherever off-street facilities are available. But where there is no off-street access to business places curb loading and unloading may be permitted in metered spaces up to a specified time such as 9:00 or 10:00 a.m., or if continuous use of a loading zone is required during business hours a permanent space may be set aside without meters. A California study shows that free loading and unloading in metered zones is permitted in 35 cities and prohibited in 23 others. A Pennsylvania study shows that of 142 cities reporting, 68 provide loading and unloading zones while 74 do not. However, all of the 74 not providing specific loading zones do allow free loading and unloading in the metered areas but in many instances only up to 9:00 or 10:00 in the morning.

Some typical practices are indicated by a recent survey made by MIS of 20 cities that have had parking meters 10 years or more. Of the 20 cities, nine make no special provision for free use of metered areas by delivery trucks. These nine cities are: El Paso, Houston, Kansas City (Mo.), Miami, Miami Beach, Omaha, Watertown (N.Y.), Wichita Falls (Tex.), and Wilkes-Barre (Pa.). The 11 other cities allow such use but generally with some restriction. Free parking is permitted in Auburn, N.Y., and Austin, Tex., while deliveries

are made and small delivery trucks are allowed to park free as close to their places of business as possible in Bluefield, W. Va.

During the construction and repair of buildings in Dallas and Portland (Ore.), contractors may make free use of metered areas adjacent to such areas when the contractor has a building permit. Since Dallas has no alleys in the central business district all loading and unloading is done at the curb in designated loading zones which are marked by the city for concerns having need for such space and the city makes an annual charge of \$1 per lineal foot of curb space. Dallas also permits trucks to park free in metered spaces from 7:00 a.m. to 10:00 a.m. Delivery trucks may park free in metered areas up until 10:00 a.m. in Fort Worth, to 10:30 a.m. in Portland, Ore., for 30 minutes in Norfolk, Va., and from 7:00 a.m. to 9:00 a.m. in Toledo. Forty-foot loading zones have been created in each business block in Montclair, N.J. Long Beach, Calif., permits emergency free use of parking meter areas and St. Petersburg, Fla., permits trucks to use metered spaces without depositing coins when loading or unloading.

Where use of metered spaces as a loading zone is allowed for a few early morning hours the city may provide a numbered hood for placing over the meter, the hood carrying letters indicating "no parking, loading zone 7:00 a.m. to 9:00 a.m.". Where there are no alleys the practice of Ann Arbor, Mich., similar to that of Montclair, may be desirable. Ann Arbor has provided in the center of each block a permanent loading zone for the entire block. Some cities may want to charge merchants who use such loading zones an annual fee approximately equal to the revenue the city would receive if the zone were metered.

Special Privileges. After the meters are installed one of the first problems to face city officials is the demand of special groups for free parking in metered areas. Repairmen, such as plumbers and electricians, want to park their service trucks free when working in near-by buildings and physicians ask for a longer time limit or free parking. Some cities have allowed such privileges only to rescind or modify their actions later because once started, the granting of special privileges is difficult to stop. The rule should be that special privileges should not be granted. The issuance of special permits for such parking is of doubtful legality since it virtually amounts to allowing certain individuals to pay for the privilege of violating the parking ordinance.

A recent survey of 20 cities that have used parking meters 10 years or more, made by MIS in December, 1947, showed that 15 cities do not permit any free parking by physicians and repairmen while five cities allow it with certain restrictions: Austin, Tex., and Long Beach, Calif., for emergencies only; Norfolk, Va., 30 minutes; Bluefield, W. Va., Physicians while making professional calls only, and servicemen when rendering free service only; and Auburn, N.Y., limited use.

How Long Do Meters Last? In 13 of the 20 cities reporting to MIS recently meters still are in service after 10 or more years, except that Houston and Toledo have replaced some that were "worn out" and Norfolk, Portland, and Wilkes-Barre have replaced the clock mechanisms. The seven remaining cities have replaced all meters installed 10 or more years ago: Austin, Dallas, Fort Worth, Kansas City, Miami Beach, Omaha, and Watertown. (The names of the 20 cities and make of meters used will appear in Public Management for February, 1948.) The officials of eight cities estimated the economical life of their meters at from 10 to 15 years, officials of seven cities report that clock mechanisms will run from five to eight years without excessive repairs while the life of the case is indefinite, and five cities did not report.

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Revenues. Meters have a good record as revenue producers in addition to their use as traffic control aids. The average revenue per meter on collections made by 443 cities in September, 1946, according to the 1947 Municipal Year Book, was \$6.10. The average revenue per meter for that month ranged from a high of \$7.20 for 14 cities of 250,000 to 500,000 down to \$4.50 for 16 cities under 5,000. Median average receipts per meter for the year 1946 for Pennsylvania municipalities that operated meters during the entire year was \$61.37, five cities getting as high as from \$95 to \$103 per meter. Revenues per meter do not decrease directly with a city's size although there is a general downward trend from the larger cities to the smaller cities.

The gross average yield per meter in various parts of a given city or on different streets may show that some meters should be removed, or that the time limit should be changed, or that the style or condition of the meters calls for replacement, or that enforcement of time limits is lax, etc.

Four out of five cities credit the receipts to the general fund, and one out of five cities set aside the receipts for traffic improvements and for off-street parking facilities. Ann Arbor, Michigan, for example, recently pledged the revenues of curb parking meters and sold \$600,000 in revenue bonds to finance the acquisition of parking lots which also will charge for parking (see Ordinance No. 83 as amended November 3, 1947). The entire expense of traffic control in metered areas is properly chargeable against meter revenues, according to the Municipal Finance Officers Association. Such expenses include direct operating and maintenance costs of meters, salaries of traffic police, marking of curb lines, and other traffic control costs in metered areas.

Collections From Meters. The finance department in nearly all cities receives the coins collected from the meters and is responsible for the handling of such moneys. If the meters contain coin boxes the seals should be put on by the finance department, and when collections are made by bringing coin boxes to the treasurer's office the seals should be inspected before opening. Coin boxes usually are numbered so each meter can be identified. If the meters do not have coin boxes that can be sealed, the money may be emptied into boxes or locked containers equipped with tamper-proof hoppers which will not allow coins to be shaken out. One meter company has a collection tank on two-wheels and equipped with a flexible tube with a funnel attached. The collector holds the funnel with one hand and the meter door with the other hand, with the coins tumbling down the funnel into the tank as the meter door is held open.

Experience shows that it is not necessary to keep a record of individual meter collections, according to the Municipal Finance Officers Association ("Parking Meters," 1946). For control purposes the same results may be achieved by keeping records of metered areas or of streets. Fluctuations of individual meters may be fairly great due to time out of service for repairs or other reasons, but receipts from a given area or a given number of blocks do not change greatly from week to week except for seasonal and other known factors.

Collections are made daily, once a week, or once every two weeks, the frequency depending upon the capacity of the meters, the possibility of vandalism, and also the parking time permitted and turnover. For example, the frequency of making coin collections ranges from daily collections in Auburn, El Paso, Fort Worth, Houston, and Wichita Falls, to once every 10 days in Miami. Cities making collections every other day are: Austin, Dallas, Long Beach, Norfolk, Toledo, Watertown, and Wilkes-Barre; every three days in Portland; and once a week in Kansas City, Montclair, Miami Beach, Omaha, and St. Petersburg. Usually it is necessary to collect oftener from penny than from nickel meters.

unless large boxes are used. Collections are more frequent in large cities. Meters of course should be built so that it takes deliberate acts of vandalism for any one except authorized officials to open the meters.

Collections from meters usually are made by uniformed police. This is the method used in 11 out of 18 cities that have had meters for 10 years or more. The 11 cities are: Auburn, N.Y.; Austin, Dallas, El Paso, Fort Worth, and Wichita Falls, Tex.; Bluefield, W. Va.; Long Beach, Calif.; Montclair, N.J.; Norfolk, Va.; and St. Petersburg, Fla. In six cities coins are collected by employees of the finance department: Houston, Kansas City, Miami Beach, Omaha, Portland, and Toledo. Miami employs an armored service company to make collections.

Repair and Maintenance. In some cities where studies have been made approximately 10 per cent of the total number of meters in operation are out of order some time during an average month. Usually a considerable amount of vandalism and tinkering with meters can be expected during the first few months after meters are first installed. Most of the trouble is caused by the insertion in the coin slots of bent and mutilated coins, chewing gum, matches, and other foreign objects. This is still the principal maintenance problem in such cities as Austin, Dallas, Kansas City, Long Beach, Miami Beach, St. Petersburg, and Wichita Falls where meters have been used 10 years or more.

The adjustment of the coin tins in the meters has caused trouble in Fort Worth but new meters recently purchased have no coin tins to cause such trouble. Toledo has had difficulty in obtaining parts for repairs, the freezing of meters in winter months, and plugging of coin slots. Watertown, N.Y., also has had trouble with cold weather and vandalism. In Wilkes-Barre, Pa., vandalism and breaking of standards by trucks has been the chief maintenance problem. Much of the repair work on meters that have been in use for seven or eight years is concerned with cleaning clock mechanisms that have stopped and replacing worn parts.

Meter repairs are handled in various ways. In some cities the police officer who checks on meter violations carries out minor field repairs not requiring over 10 or 15 minutes. He carries small replacement parts, replacement meter units, and the necessary special tools for this work in his three-wheel motorcycle. In Auburn, N.Y., and Montclair, N.J., policemen who have had experience as clock repairmen handle parking meter repairs. In Miami the repair work is done by contract but this has proved costly to the city and steps are being taken to handle maintenance in the city's traffic and transportation department.

One full-time employee generally can handle all minor repairs on 1,000 meters. In most cities major repairs are handled by the central garage, police garage, water meter repair shop, or by skilled firemen. In Des Moines, however, most repairs and adjustments can be made on the spot. City mechanics have built a truck designed by the city traffic engineer, and it is used by two maintenance men in making meter repairs and also in making twice-a-week collections from meters. Equipped with a spotlight for night work the city plans to install radio-telephone communication between the city hall and the truck.

Cost of Collections and Maintenance. The cost of making collections from meters and maintenance of meters averages 10 per cent of gross meter receipts on the basis of data from 17 cities that have had meters 10 years or more. Individual cities reported costs ranging from 5 to 20 per cent. In six cities such costs approximated 10 per cent of gross receipts: Auburn, Miami Beach, Montclair, Omaha, Portland, and Wichita Falls. Four other cities reported 6 or 7 per cent; Austin,

Dallas, El Paso, and St. Petersburg; Fort Worth 9 per cent; Long Beach 5 per cent; Kansas City and Wilkes-Barre 15 per cent; Miami and Watertown 17 per cent; and Toledo 20 per cent. Factors contributing to variations in cost are the frequency of painting standards and marking curb lines, salaries of repairmen, type of meters, and length of time in operation.

Enforcement. Adequate enforcement is important; if it is lax the public will show the same disregard for meters as for limited parking time in nonmetered areas. Meters usually make enforcement of parking regulations easier, reduce the number of parking violations, and reduce double parking, parking in illegal areas, and overtime parking. It is easier to check parking time with meters since violations can be easily detected from a three-wheel motorcycle and the process of chalking tires is or should be almost entirely eliminated. Policing of parking meters requires about one-fourth of the manpower required by the chalk-and-stop-watch method of marking tires. The number of meters one man on a three-wheel motorcycle can check varies from 250 to 500, the average running somewhere between 300 and 400 meters (see Public Management for November, 1947, p.331).

Meters should be checked by the enforcement officer at least every half-hour. He also can work on double parking, help clear traffic jams, and check unmetered parking areas on his route. Tickets should be issued whenever illegal parking is indicated by the meters. Incidentally, all police officers --beat patrolmen, traffic police, and others--should be instructed to tag any car parked by a meter indicating a violation. Police should not turn the handle of manual meters showing violations before tagging the car because the parker may have inserted a coin and purposely omitted to turn the handle. This practice enables the parker to secure full legal parking time limit in addition to the time he parked before the police officer arrived on the scene.

The meter should clearly indicate the parking time limit and state that parking beyond that limit is prohibited. Parking meters are intended primarily to facilitate the enforcement of parking time limits and assure equitable sharing of curb space. The depositing of additional coins to exceed the legal limit nullifies the purpose of the meter. When the enforcement officer suspects that a car owner is using space hour after hour by depositing additional coins, the tire should be marked to see if the driver is violating the time limit. Perhaps an occasional marking of tires on all cars in metered areas would indicate the extent to which additional parking time is being sought by depositing additional coins.

During the first week or so after meters are first installed the police may help sell the public by leaving courtesy tags on cars parked overtime. For example, in Colby, Kans., during the first two weeks the meters were in use the police dropped two pennies into meters in front of cars parked overtime and left courtesy tickets on the cars inviting the driver to visit the police station for a discussion of parking regulations.

If the enforcement officer does not handle meter repairs he should make frequent reports to the repair shop on meters that are out of order and a report on faulty meters should be made each day to the municipal traffic court so that motorists will not be penalized if they park at meters which are not operating.

Out-Of-State Cars. Fourteen of the 20 cities surveyed by MIS make no distinction regarding out-of-state cars that violate parking meter regulations. All cars violating the ordinance are tagged in Austin, Bluefield, Dallas, Long Beach, Kansas City, Miami, Miami Beach, Montclair, Norfolk, St. Petersburg, Toledo, Watertown, Wichita Falls, and Wilkes-Barre. Cars with out-of-state licenses are shown special courtesy in Auburn, El Paso, Houston, and Omaha. Fort Worth and Portland do not tag out-of-state tourists' cars that show signs of being in transit. In several cities any waiver of the fine is determined upon information obtained when the party appears to pay the fine.

In the smaller cities perhaps as many as one-half of the overtime parkers will be nonresidents. A record kept by the police in a city of 6,000 population recently showed that of 660 cars tagged over a three-month period for overtime parking in metered areas, 340 were from out of the county. Of these 340 violators, 180 paid their fines and 160 did not report to the judge.

Fines. When a violation is indicated by the meter, the officer attaches a ticket to the car indicating a fine payable at the police station, traffic court, or by mail. The great majority of cities impose a fine of \$1 for violations of parking meter ordinances, with a few cities having a 50-cent fine and others \$1.50 and \$2. The \$1 fine usually must be paid within 24 hours after the ticket is issued or a penalty is added. Higher fines apply for habitual violators. It is said that a small fine for the occasional offender helps keep a favorable public opinion. But in times of high prices a parking fine of 50 cents and perhaps even of \$1 is much too small, and hardly discourages parking meter violations. This is particularly true in the larger cities where private parking lots are charging exorbitant fees for parking and storing cars. The fine certainly should be large enough to discourage overtime parking, without penalizing violators too heavily.

Special Studies. Surveys on the use of parking meters have been made in at least six states: (1) Colorado ("Parking Problems in Colorado", Colorado Municipal League, 327 Norlin Library, Boulder. 1947. 16pp. \$1.); (2) California (Western City Magazine, May, 1947. pp.20-27. 458 S. Spring St., Los Angeles 13. Reprints 12 cents.); (3) Oregon ("Parking Meters," League of Oregon Cities, Eugene, 1941); (4) Kansas ("Parking Meter Service in Kansas," League of Kansas Municipalities, Topeka, Kansas. 1947. 2pp. 50 cents.); (5) Pennsylvania ("Parking Meters in Pennsylvania Municipalities," Institute of Local Government, Pennsylvania State College, State College. 1947. 35pp. \$1); and (6) Tennessee ("Parking Meters in Tennessee," Governmental Reference Service, University of Tennessee, Knoxville. 1942. 22pp.). Other good studies are "Parking Meters" (Municipal Finance Officers Association, 1313 East 60 Street, Chicago. 1946. 8pp. 35 cents); and "Parking Meters--Legality--Model Ordinance Annotated" (National Institute of Municipal Law Officers, 730 Jackson Place, N.W., Washington 6, D.C. 1947. 29pp. \$2). Among good reports on the parking problem are: "Parking Manual: How To Solve Community Parking Problems" (American Automobile Association, Washington 6, D.C. 1946. 181pp. \$1); and "Parking" (Eno Foundation, Saugatuck, Conn. 1946. 119pp.). Vehicular Parking Ltd., 1422 Maple Avenue, N.E., Canton 5, Ohio, issues a report each year entitled "Parking Meters in the United States," containing a list of all cities with meters and giving the type and make of meters in each city. The 1947 Municipal Year Book gives individual city data on number of meters, type, make, and gross revenue for 714 cities.

Note: MIS subscribers may secure on request loan copies of specifications, the Kansas City and Oakland reports on meters, and a typical ordinance.

